

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Terrel E. Kuhn et al. : Batch No.: None

Serial No. herewith : Group Art Unit: Unknown

Filed: herewith : Examiner: Unknown

For: Method For Controlling Carbon
Formation On Repaired Combustor Liners

PETITION TO MAKE SPECIAL
(37 C.F.R. 1.102)

Office of Petitions
Crystal Plaza 4
Room 3C-23
2201 S. Clark Place
Arlington, VA 22202

Sir:

This petition under 37 C.F.R. § 1.102 to make the present application special is submitted based on the following:

Basis for Petition

This petition is made pursuant to 37 C.F.R. § 1.102 and MPEP 708.02 on the grounds that:

A) the fee set forth in 37 C.F.R. 1.17(h) is submitted herewith;

B) all claims are directed to a single invention, or if the Office determines that all the claims presented are not obviously directed to a single invention, applicants will make an election without traverse;

C) a statement accompanies this petition that a pre-examination search was made, listing the field of search by class and subclass, publication, Chemical Abstracts, foreign patents, etc.;

D) one copy each of the references deemed most closely related to the subject matter encompassed by the claims is submitted herewith; and

E) a detailed discussion of the references accompanies this petition, which discussion points out, with the particularity required by 37 C.F.R. 1.111 (b) and (c), how the claimed subject matter is patentable over the references.

Fee Submission

The petition fee required is paid as follows:

- ☒ Enclosed is a check for \$130.00.
- ☒ Charge Account 01-1125 for any fee deficiency.
- ☐ Charge Account 01-1125 the sum of \$-----.

Statement of Pre-Examination Search

A search was conducted in Class 29, subclasses 402.03, 402.07, 402.08, 402.09, 889.1 and 890.1; and Class 60, subclasses 752, 754, 755, 756, and 800 on computer using ESPACENET (EPO) and the PTO EAST/WEST databases.

Discussion of References

US Patent, 6,581,285 shows a method of replacing combustor liner panels. Inner and outer liners include nuggets formed between adjacent panels. A nugget can be cut, an adjacent panel removed, and a replacement

panel installed.

US Patent 6,568,079 shows a method of replacing combustor liner panels. Inner and outer liners include nuggets formed between adjacent panels. A panel can be cut, an adjacent panel removed, and a replacement panel installed.

US Patent 6,546,731 discloses a twin wall combustion chamber. An outer wall has impingement holes and the inner wall has effusion holes that are greater in number than the impingement holes. The effusion holes are in groups of seven (7).

US Patent 6,530,971 discloses a braze alloy to fill cracks in a combustor liner.

US Patent 6,101,814 shows a louvered combustor liner with three arrays of dilution holes. The holes in the arrays are arranged equiangularly.

US Patent 6,079,199 provides a one piece combustor wall having cooling air orifices configured in circular peripheral rings.

US Patent 5,918,467 shows a heat shield for a combustion chamber having effusion holes. The heat shield surface is divided into sectors. The central axes of the effusion holes are arranged in parallel to each other in a given sector and extend toward an associated corner area.

US Patent 5,799,491 provides overlapping, heat resistant tiles to form an internal liner around the walls of a combustor. The tiles contain cooling holes and are joined together by studs. The cooling holes are arranged in two and three rows at the upstream and downstream ends of a tile, respectively.

US Patent 5,758,504 discloses an inner combustor liner having cooling holes in a centroid pattern, together with an outer liner having cooling holes radially aligned with the centroid. The liners both appear to be of a single piece construction.

US Patent 5,261,223 discloses dual combustor liners having cooling holes, dilution holes, and rectangular cross-sectional cooling film restarting holes downstream of the cooling holes. The forward and aft ends of both liners appear to be fixedly connected to the turbine engine.

US Patent 4,614,082 provides a combustor liner with panels that are in a slideable friction mounting arrangement on a frame. The individual panels may be removed for repair.

US Patent 4,232,527 shows inner and outer porous, laminated wall segments of a combustor that are joined to a dome by a solid metal ring having effusion holes. Solid metal rings are also used to join the wall segments together, which wall segments also have cooling holes.

US 2003/0066821 is a method of laser drilling a hole.

In contrast to the above references, the present invention provides a method of converting a non-effusion combustor liner to an effusion combustor liner, comprising making at least one of a modular inner effusion panel subassembly and a modular outer effusion panel subassembly remote from said non-effusion combustor liner; removing at least one of a non-effusion inner panel and a non-effusion outer panel from said non-effusion combustor liner; and replacing said at least one non-effusion inner and outer panel with said at least one modular effusion inner and outer panel. A first modular effusion liner

panel subassembly includes six rows of first effusion holes proximate to one end of a first effusion liner panel subassembly and wherein at least one of the six rows includes 239 first effusion holes; and five rows of second effusion holes distal from the one end of the first effusion liner panel subassembly and wherein at least one of the five rows includes 281 second effusion holes.

In the event the Office wishes to discuss any aspect of this petition, please contact the attorney at the telephone number identified below.

Respectfully submitted,

By:



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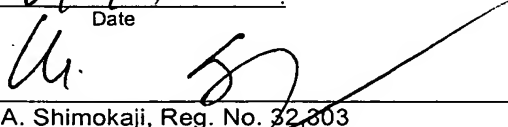
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on 2/5/04
Date



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